Figure 6A Flow Chart depicting
PopulateTemplates and PopulateData operations
Part 1 of 10

User initiates loading of set of edit time data into Viewer and Controller for Universal Data Editor Component. Causes Interface Shell Application (A) to call PopulateData method on the editing expert system core engine.

2B

Call PopulateTreeViews function with 'Knowledge' flag parameter

3B

Iterate through all instantiations of KDTreeView

Is the list empty yet?

Yes → End PopulateData Operation

No

Is current KDTreeView of type 'Knowledge'?

No → Skip

Yes → 4

KDTreeView.InsertInoTree

Continue Iterating through KDTreeView Intances

Figure 6: Flow Chart depicting PopulateTemplates and PopulateData operations

KDTreeView.InsertIntoTree
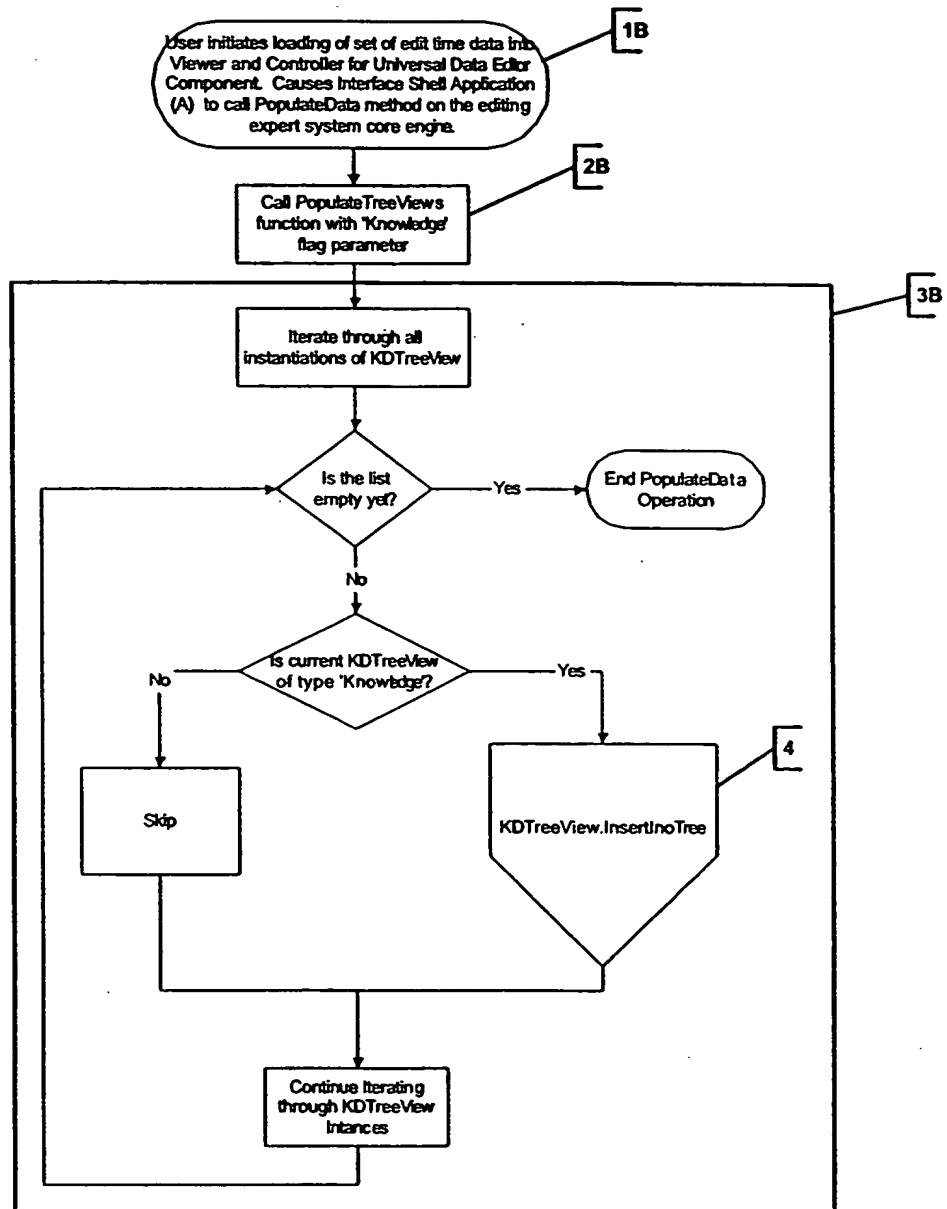
Start KDTreeView.InsertIntoTree

Iterate through all instances
of KDTreeLevel owned by
current KDTreeView

Is the list
empty yet?

Yes → Return from
KDTreeView.InsertIntoTree
Operation

No

Is current KDTreeLevel
a root Level (it has no
parent Level)?

No

Yes

Skip

5

KDTreeLevel.
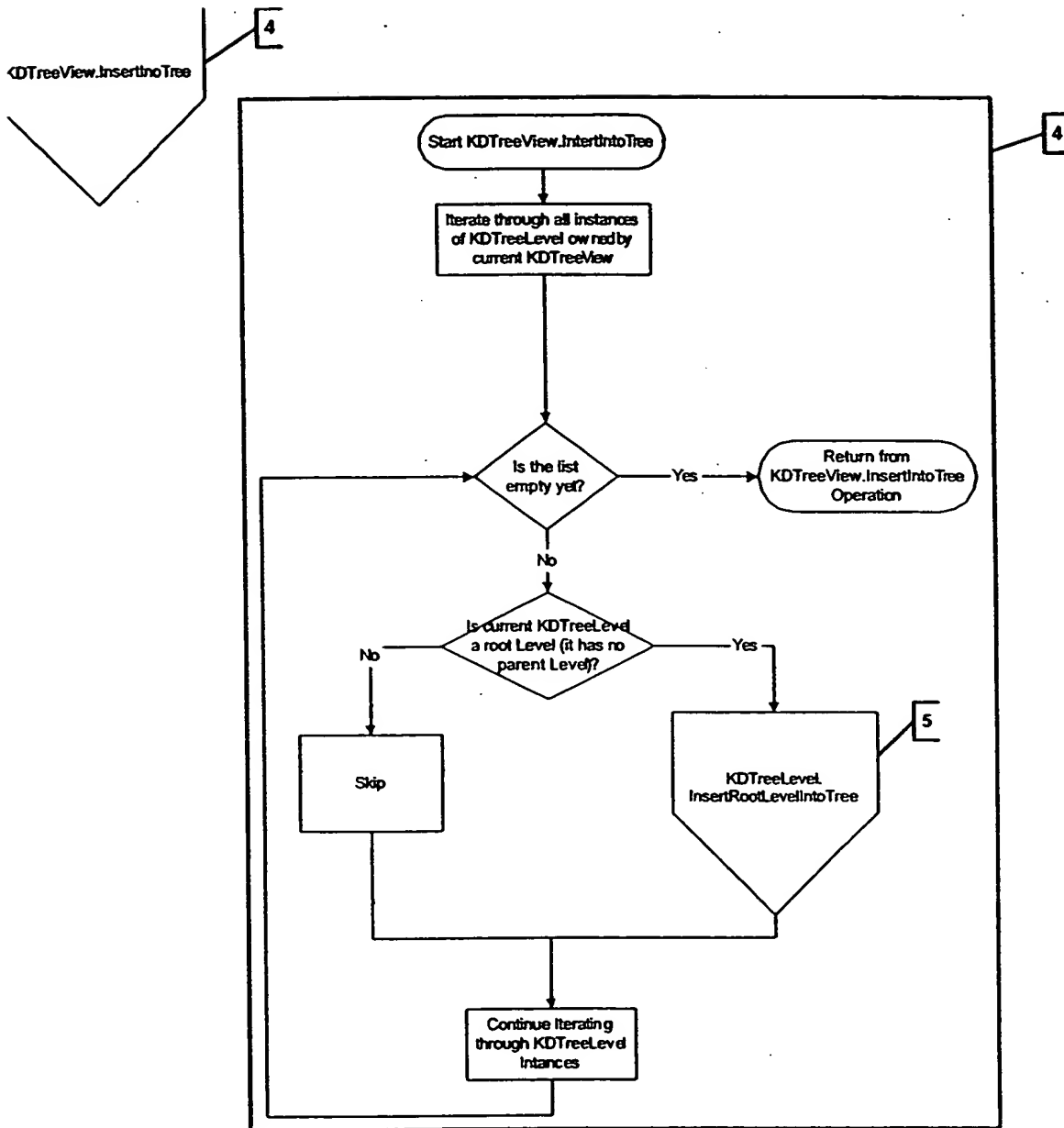InsertRootLevelIntoTree

Continue Iterating
through KDTreeLevel
Intances

Figure 6: Flow Chart depicting
PopulateTemplates and PopulateData operations

KDTreeLevel.
InsertRootLevelIntoTre
e

5

Start KDTreeLevel (A).
IntertRootLevelIntoTree

Is A of type
'Recursive?

Yes — See A pg. 6

6

No

Is A of type
'Repository?

Yes — See B pg. 7

7

No

Is A of type
'Template'?

Yes — See C pg. 8

8

5

Figure 6. Flow Chart depicting
PopulateTemplates and PopulateData operations

KDTreeLevel.
InsertChildLevelIntoTree

9

Start KDTreeLevel (A).
IntertChildLevelIntoTree

10

See D
pg. 9 ←—Yes—— Is A of type
'Recursive' or type
'ChildList'?

No

11

See E
pg. 10 ←—Yes—— Is A of type
'Repository?

Figure 6: Flow Chart depicting
PopulateTemplates and PopulateData operations
Part 5 of 10

```
                              ┌───┐
                            ( A )
                              └───┘
                                │
                                ▼
    ┌───────────────────────────────────────────┐──┐  ┌──┐
    │  ┌─────────────────────────────────────┐  │      │12│
    │  │  Get Root Element (B) of this       │  │      └──┘
    │  │  KDTreeLevel                        │  │
    │  │  (A).m_KDClass                      │  │
    │  └─────────────────────────────────────┘  │
    │                     │                      │
    │                     ▼                      │
    │  ┌─────────────────────────────────────┐  │
    │  │  get info from                      │  │
    │  │  B.GetTreeCaption and               │  │
    │  │  B.GetTreeIcon.                     │  │
    │  └─────────────────────────────────────┘  │
    │                     │                      │
    │                     ▼                      │
    │  ┌─────────────────────────────────────┐  │
    │  │  Insert node into tree with         │  │
    │  │  caption and Icon from B            │  │
    │  └─────────────────────────────────────┘  │
    └───────────────────────────────────────────┘
                          │
┌─────────────────────────┼──────────────────────────────────────┐
│                         ▼                                        │
│      ┌─────────────────────────────────────┐                    │
│      │  Iterate through all instances      │                    │
│      │  (C) of KDTreeLevels owned          │                    │
│      │  by A in A.ChildTreeLevels          │                    │
│      └─────────────────────────────────────┘                    │
│                         │                                        │──┐  ┌──┐
│                         ▼                                        │     │13│
│  ┌──────────────────┐       ◇◇◇◇◇◇◇◇◇                           │     └──┘
│  │ Return from      │      ◇          ◇                         │
│  │ KDTreeLevelInsertRootLev│◀─Yes─◇  Is the list  ◇◀────────┐   │
│  │ elIntotree Operation │    ◇  empty yet?  ◇              │   │
│  └──────────────────┘       ◇          ◇                    │   │
│                              ◇◇◇◇◇◇◇◇◇                     │   │
│                                 │                           │   │
│                                 No                          │   │
│                                 ▼                           │   │
│              ┌─────────────────────────────────┐           │   │
│              │  Call                           │           │   │
│              │  C.InsertChildLevelIntoTree     │           │   │
│              │  function                       │           │   │
│              └─────────────────────────────────┘           │   │
│                              │                              │   │
│                              ▼                              │   │
│              ┌─────────────────────────────┐──┐  ┌──┐       │   │
│              │                             │      │ 9│       │   │
│              │  KDTreeLevel.               │      └──┘       │   │
│              │  InsertChildLevelIntoTree   │                │   │
│              │                             │                │   │
│               \                           /                 │   │
│                _____/                  │   │
│                              │                              │   │
│                              ▼                              │   │
│              ┌─────────────────────────────────┐           │   │
│              │  Continue Iterating through     │           │   │
│              │  KDTreeLevel Intances           │───────────┘   │
│              └─────────────────────────────────┘               │
└────────────────────────────────────────────────────────────────┘
```

Figure 6i Flow Chart depicting
PopulateTemplates and PopulateData operations

Figure 6ı Flow Chart depicting
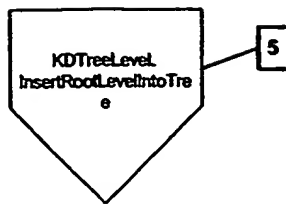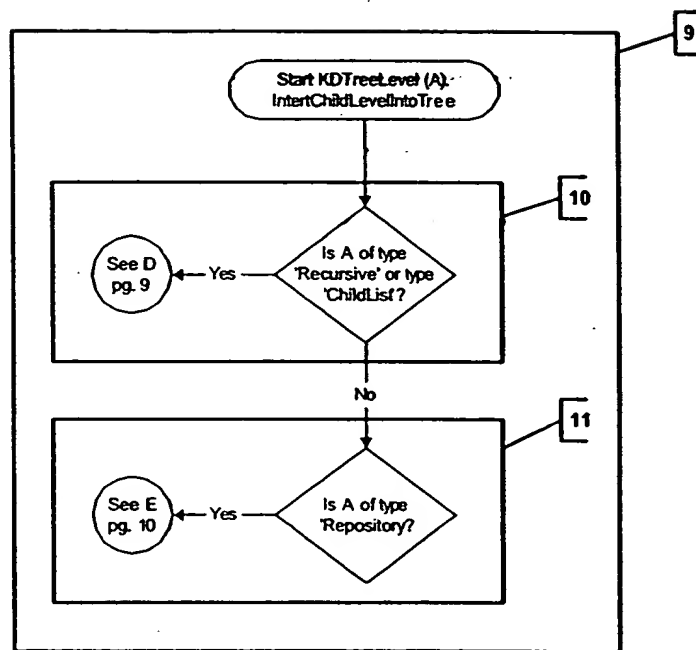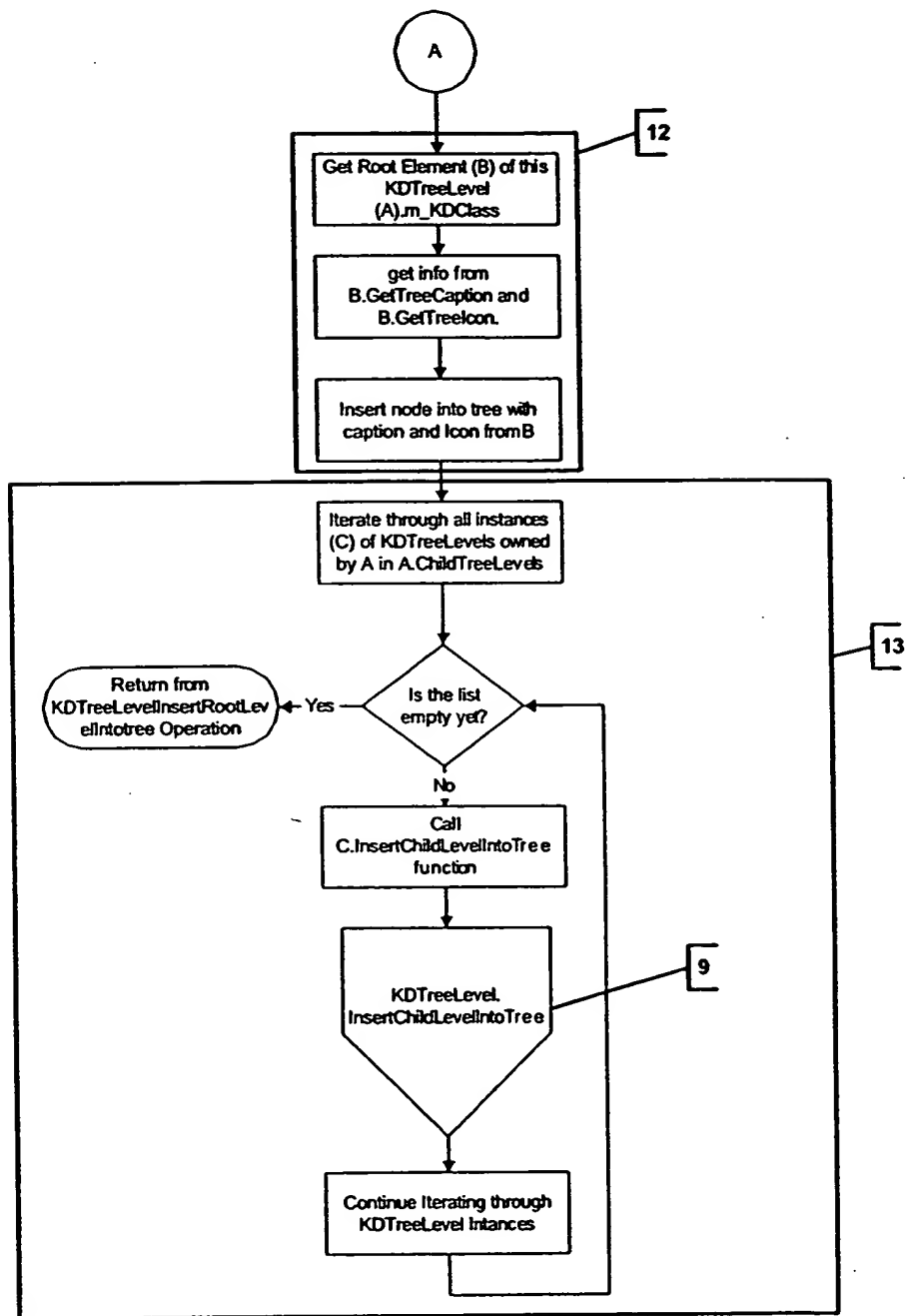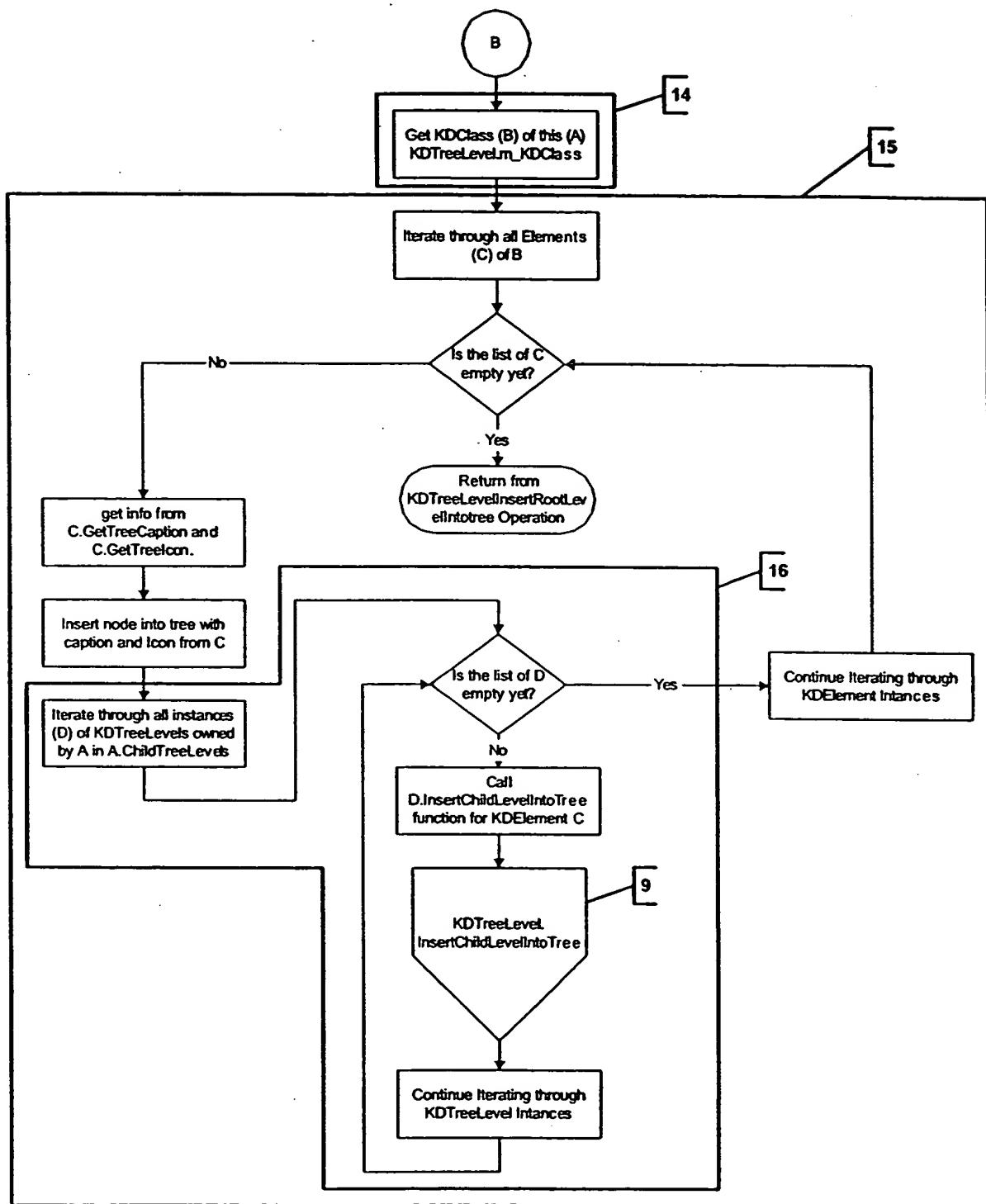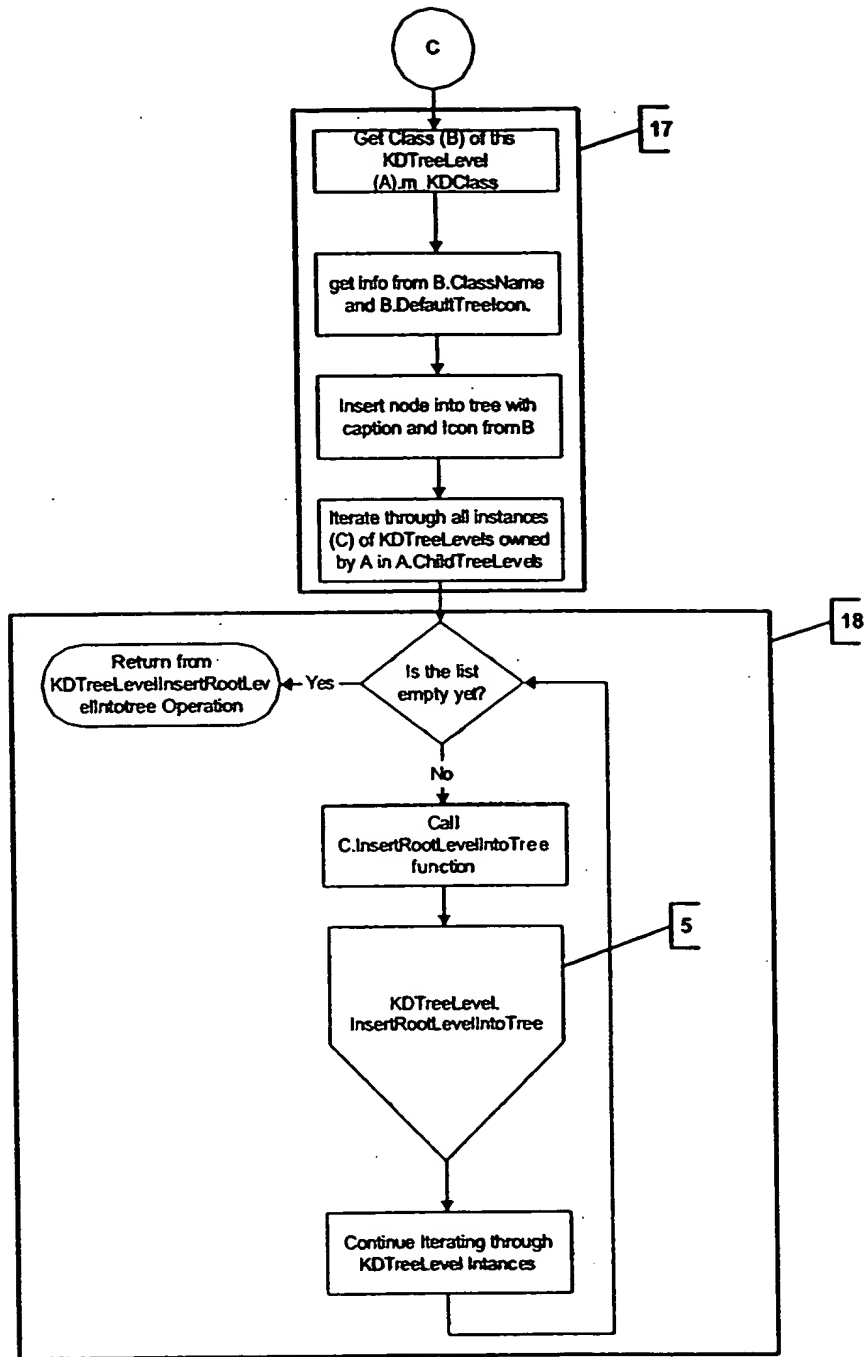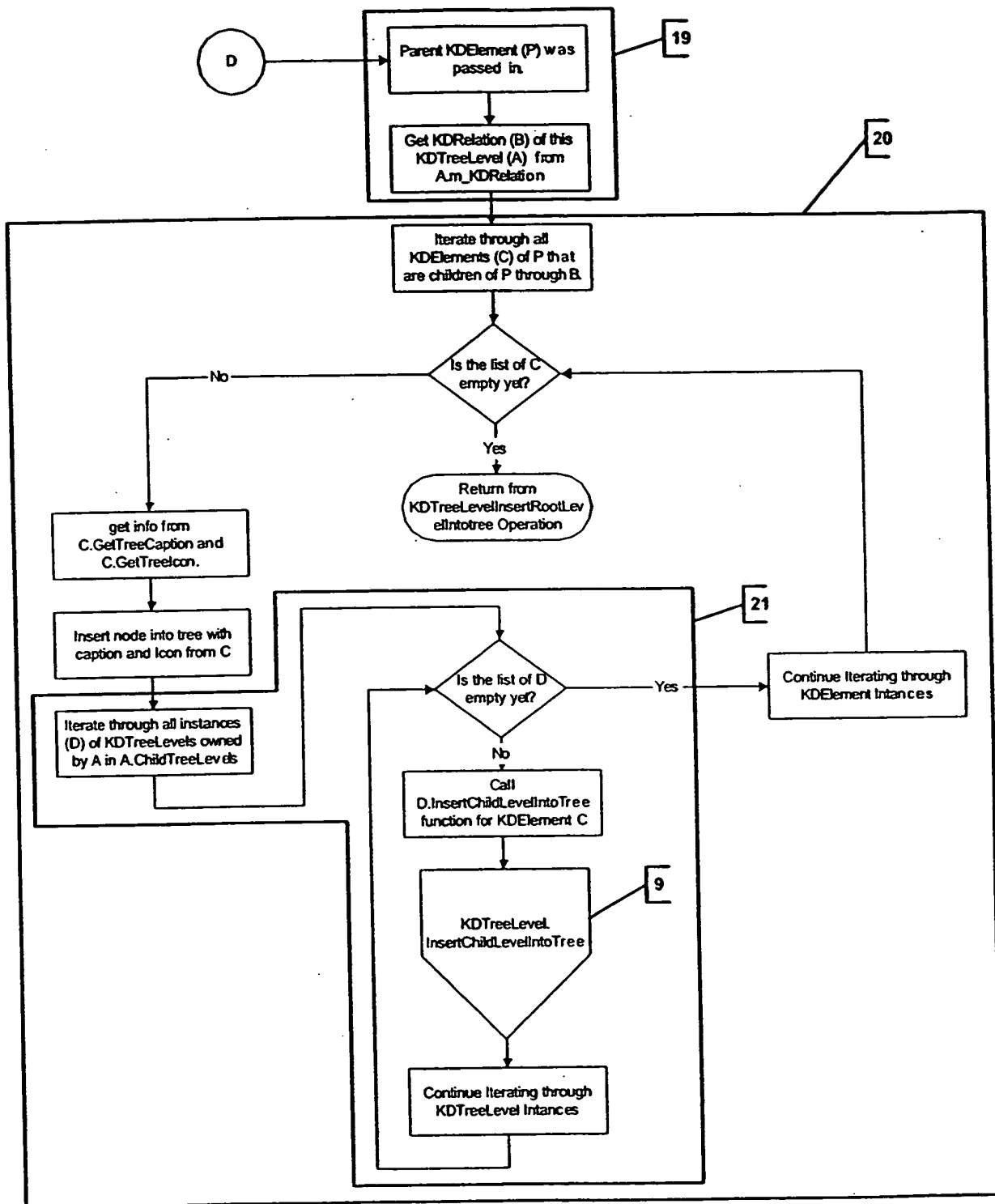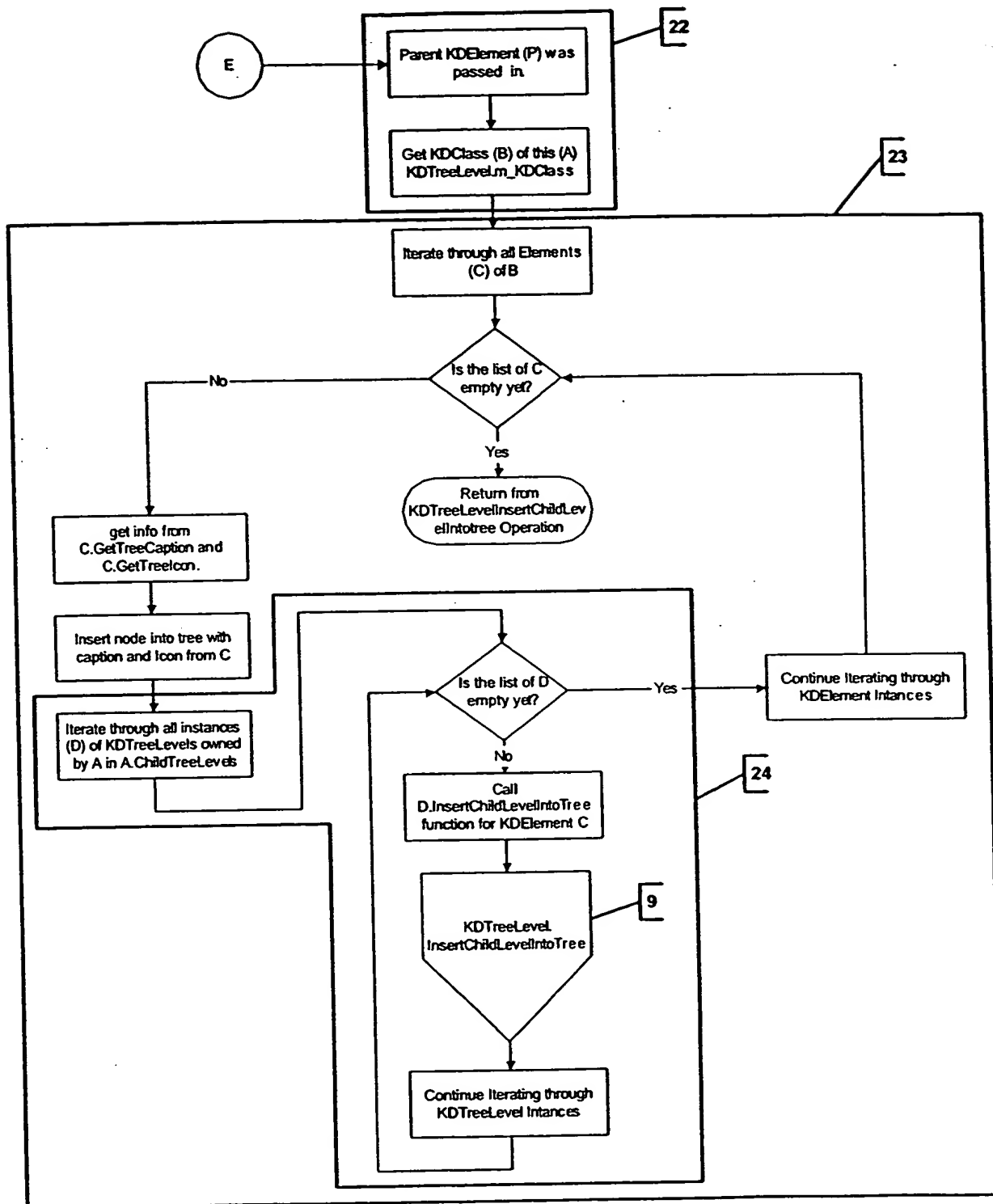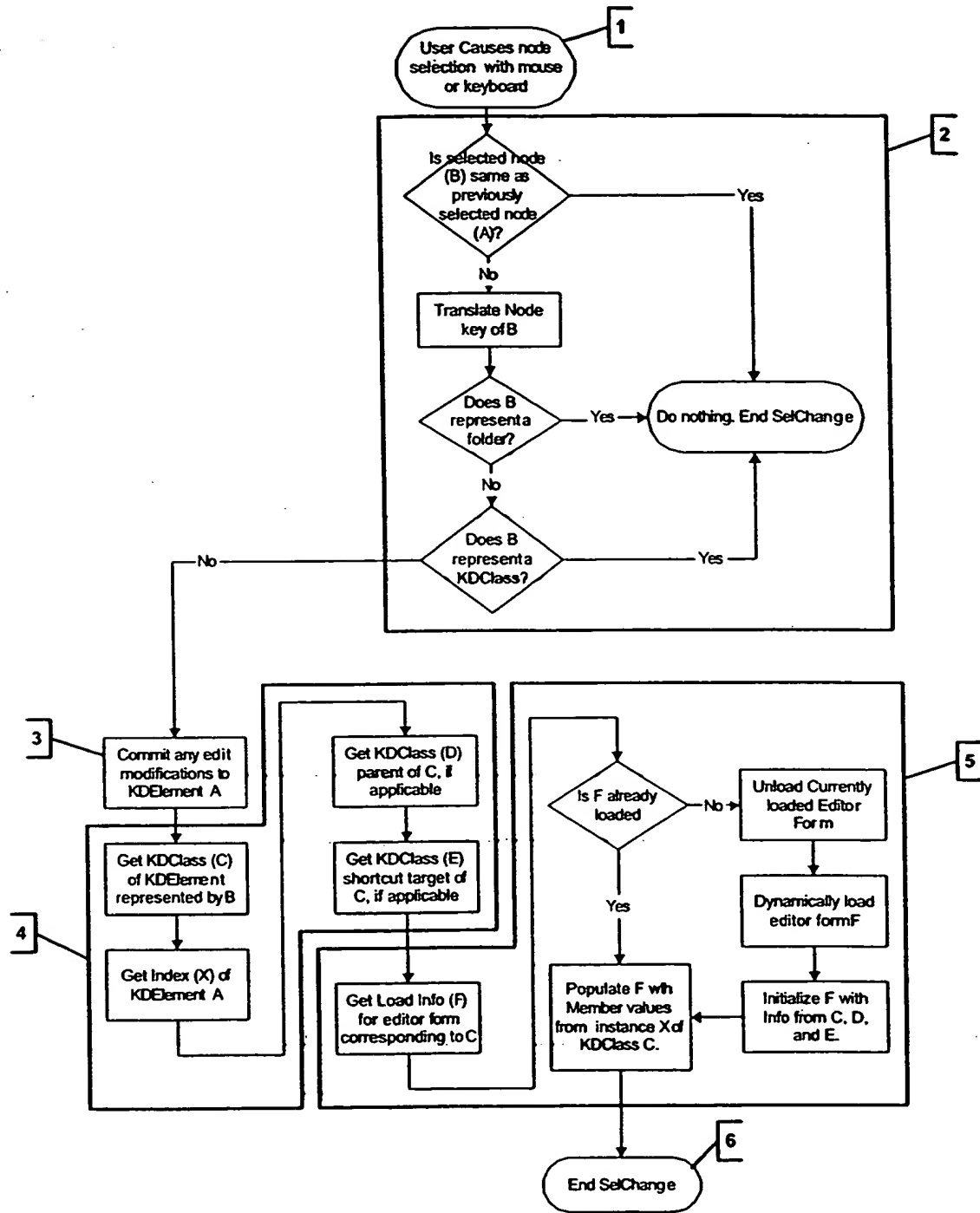PopulateTemplates and PopulateData operations

C

Get Class (B) of this KDTreeLevel (A).m_KDClass

17

get info from B.ClassName and B.DefaultTreeIcon.

Insert node into tree with caption and icon from B

Iterate through all instances (C) of KDTreeLevels owned by A in A.ChildTreeLevels

18

Return from KDTreeLevelInsertRootLevelIntotree Operation ◄─Yes─ Is the list empty yet?

No

Call C.InsertRootLevelIntoTree function

5

KDTreeLevel.InsertRootLevelIntoTree

Continue Iterating through KDTreeLevel Intances

Figure 6 ᴴ Flow Chart depicting
PopulateTemplates and PopulateData operations

Figure 6: Flow Chart depicting
PopulateTemplates and PopulateData operations

E

Parent KDElement (P) was passed in.

22

Get KDClass (B) of this (A) KDTreeLevel.m_KDClass

23

Iterate through all Elements (C) of B

Is the list of C empty yet?

No

Yes

Return from KDTreeLevelInsertChildLev elIntotree Operation

get info from C.GetTreeCaption and C.GetTreeIcon.

Insert node into tree with caption and Icon from C

Iterate through all instances (D) of KDTreeLevels owned by A in A.ChildTreeLevels

Is the list of D empty yet?

Yes

No

Continue Iterating through KDElement Intances

Call D.InsertChildLevelIntoTree function for KDElement C

24

KDTreeLevel. InsertChildLevelIntoTree

9

Continue Iterating through KDTreeLevel Intances

Figure 6₁ Flow Chart depicting PopulateTemplates and PopulateData operations

```
                                          ┌─┐
                                          │1│
                               ╭──────────┴─╮
                               │ User Causes node │
                               │ selection with mouse │
                               │  or keyboard │
                               ╰──────┬──────╯
            ┌─────────────────────────┼──────────────────────────┐ ┌─┐
            │                         ▼                           │ │2│
            │                   ╱ Is selected node ╲              │ └─┘
            │                  ╱    (B) same as     ╲             │
            │                 ╱     previously       ╲──── Yes ──────────────┐
            │                 ╲   selected node      ╱             │         │
            │                  ╲      (A)?          ╱              │         │
            │                   ╲                  ╱               │         │
            │                        │ No                         │         │
            │                        ▼                            │         │
            │                 ┌──────────────┐                    │         │
            │                 │ Translate Node│                   │         │
            │                 │   key of B    │                   │         │
            │                 └──────┬───────┘                    │         ▼
            │                        ▼                            │  ╭──────────────────╮
            │                    ╱ Does B ╲                       │  │ Do nothing. End SelChange │
            │                   ╱ represent a ╲──── Yes ──────────────►│                  │
            │                   ╲   folder?  ╱                    │  ╰──────────────────╯
            │                    ╲         ╱                      │         ▲
            │                        │ No                         │         │
            │                        ▼                            │         │
            │                    ╱ Does B ╲                       │         │
   ┌─── No ─────────────────────╱ represent a ╲──── Yes ──────────────────────┘
   │        │                   ╲  KDClass?  ╱                    │
   │        │                    ╲         ╱                      │
   │        └───────────────────────────────────────────────────┘
   │
   ▼
```

┌─┐		

```
┌─┐                                                                          ┌─┐
│3│                                                                          │5│
└┐└──┐  ┌────────────────┐  ┌────────────────┐   ┌──────────────────────────┴─┐
 │    │  │ Commit any edit │  │ Get KDClass (D) │  │                             │
 │    └──┤ modifications to│  │ parent of C, if │  │         ╱ Is F already ╲    │
 │       │ KDElement  A    │  │   applicable    │  │        ╱    loaded      ╲── No ─►┌──────────────┐
 │       └───────┬────────┘  └───────┬────────┘  │         ╲                ╱    │  │ Unload Currently│
 │               ▼                   ▼            │          ╲              ╱     │  │ loaded Editor   │
 │       ┌────────────────┐  ┌────────────────┐  │              │                │  │    Form         │
 │       │ Get KDClass (C) │  │ Get KDClass (E) │  │              │ Yes            │  └───────┬───────┘
 │       │ of KDElement    │  │ shortcut target of│ │             │                │          ▼
 │       │ represented by B│  │ C, if applicable │  │            ▼                 │  ┌──────────────┐
 │       └───────┬────────┘  └───────┬────────┘  │  ┌────────────────┐           │  │ Dynamically load│
┌─┐              ▼                   ▼            │  │ Populate F with │           │  │ editor form F   │
│4│      ┌────────────────┐  ┌────────────────┐  │  │ Member values   │           │  └───────┬───────┘
└┘       │ Get Index (X) of│  │ Get Load Info (F)│ │  │ from instance X of│         │          ▼
         │ KDElement  A    │  │ for editor form │  │  │ KDClass C.      │◄──────────┤  ┌──────────────┐
         └────────────────┘  │ corresponding to C│ │  └───────┬────────┘           │  │ Initialize F with│
                             └────────────────┘  │          │                     │  │ Info from C, D, │
                             │                    │          │                     │  │   and E.        │
                             └────────────────────┼──────────┘                     │  └──────────────┘
                                                  └────────────────────────────────┘
                                                           │
                                                           ▼
                                                   ╭──────────────╮     ┌─┐
                                                   │ End SelChange │     │6│
                                                   ╰──────────────╯     └─┘
```

Figure 7: Flow Chart depicting SelChange operation
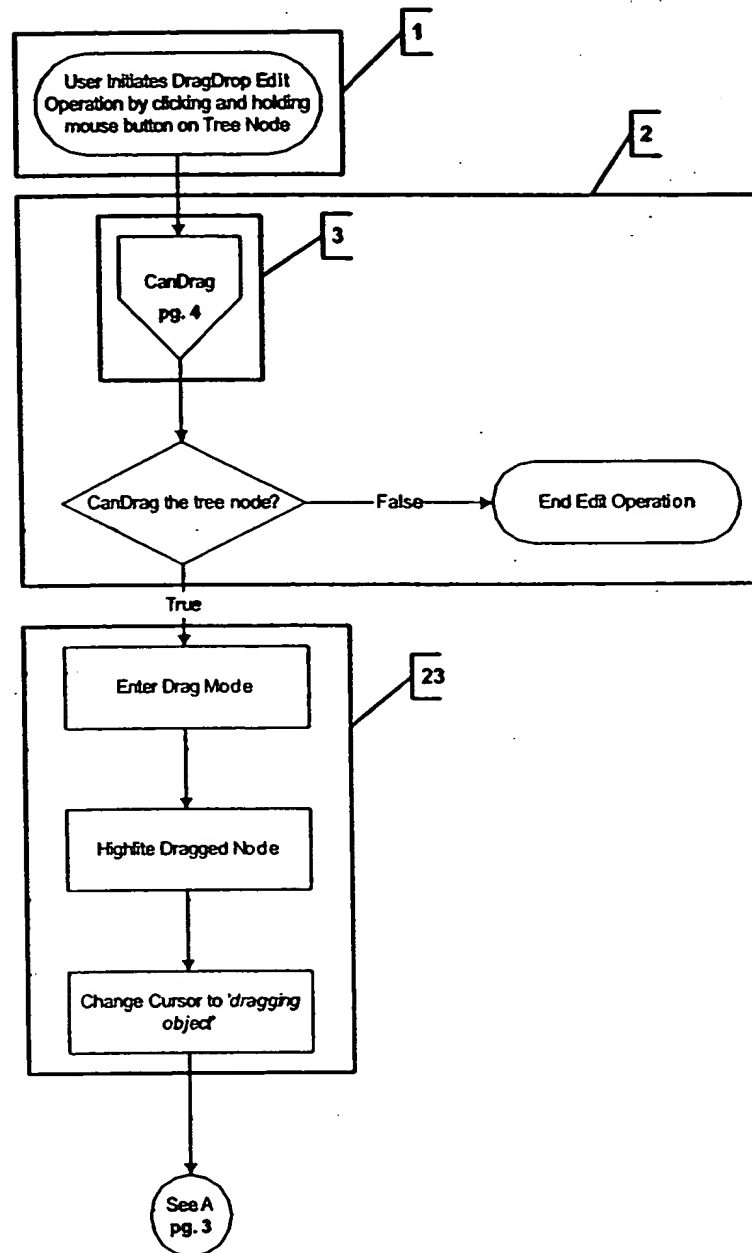
Part 1 of 1

Figure 8^ Flow Chart depicting CanDrag, CanDrop,
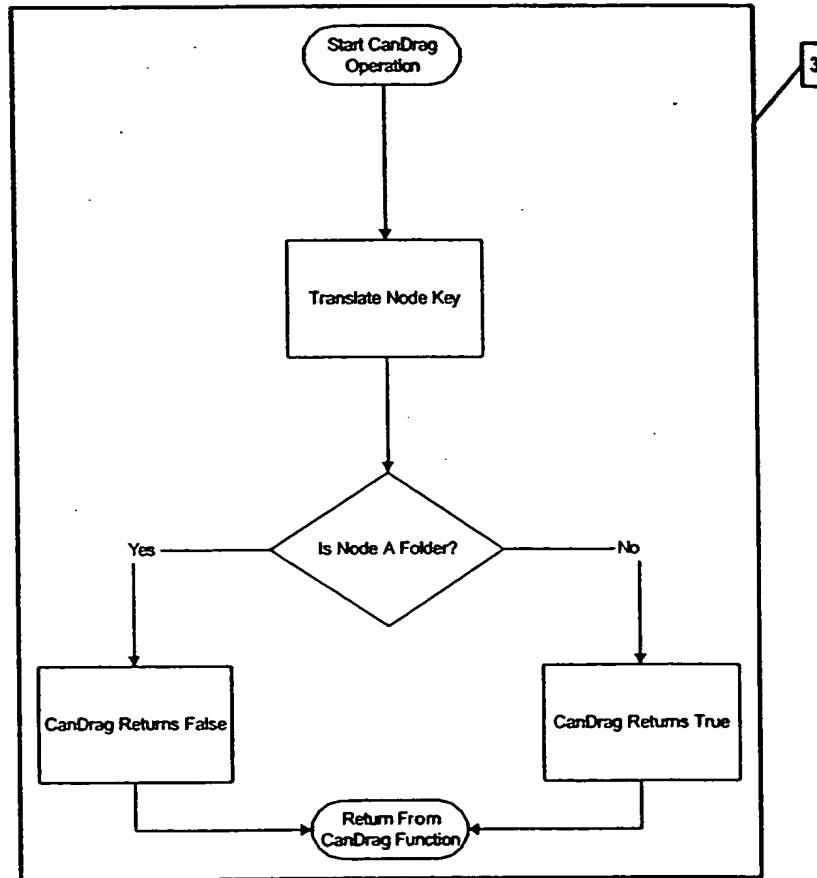and DragDrop edit operations

Part 1 of 21
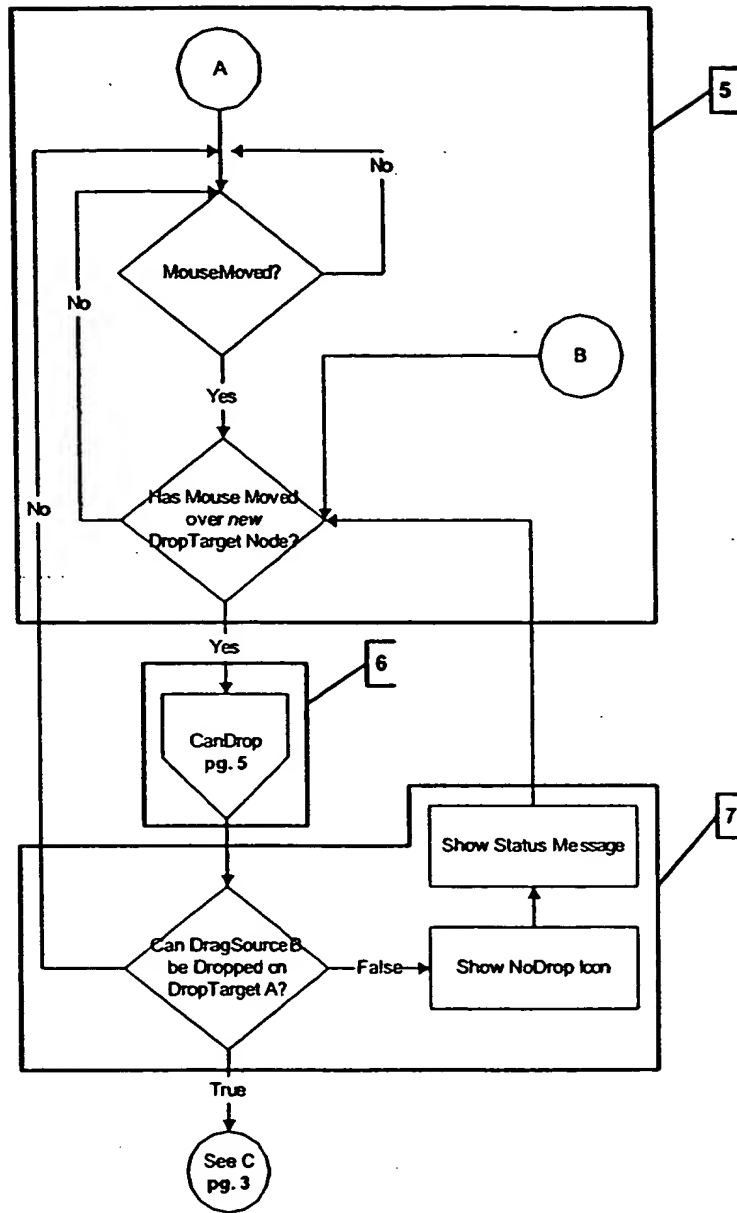
Figure 8B Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations
Part 2 of 21
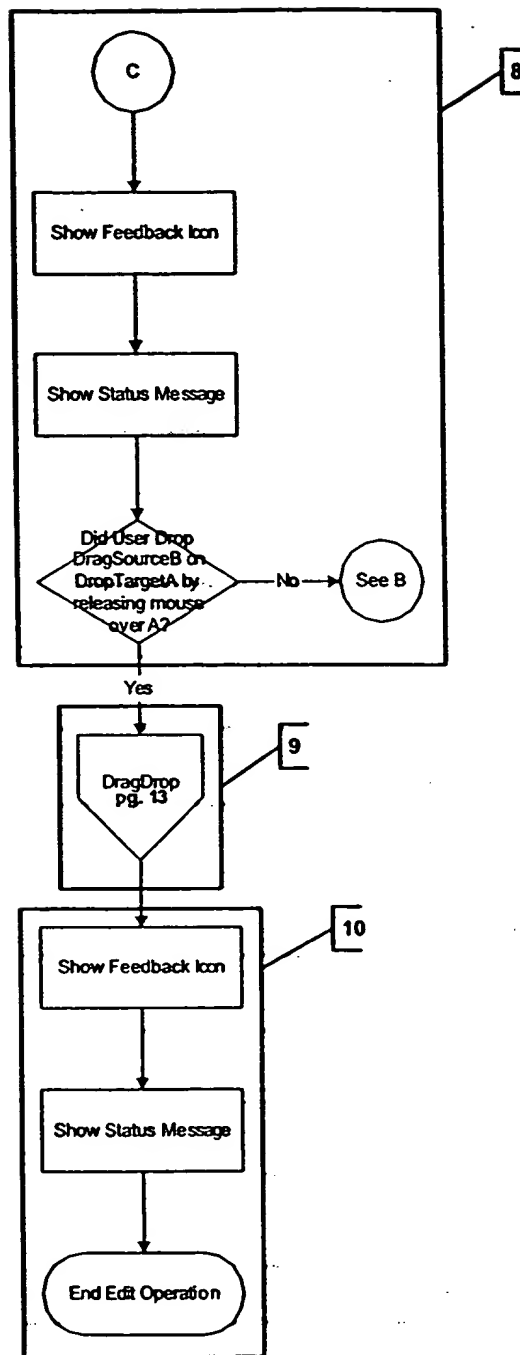
Figure 8A Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Part 3 of 21

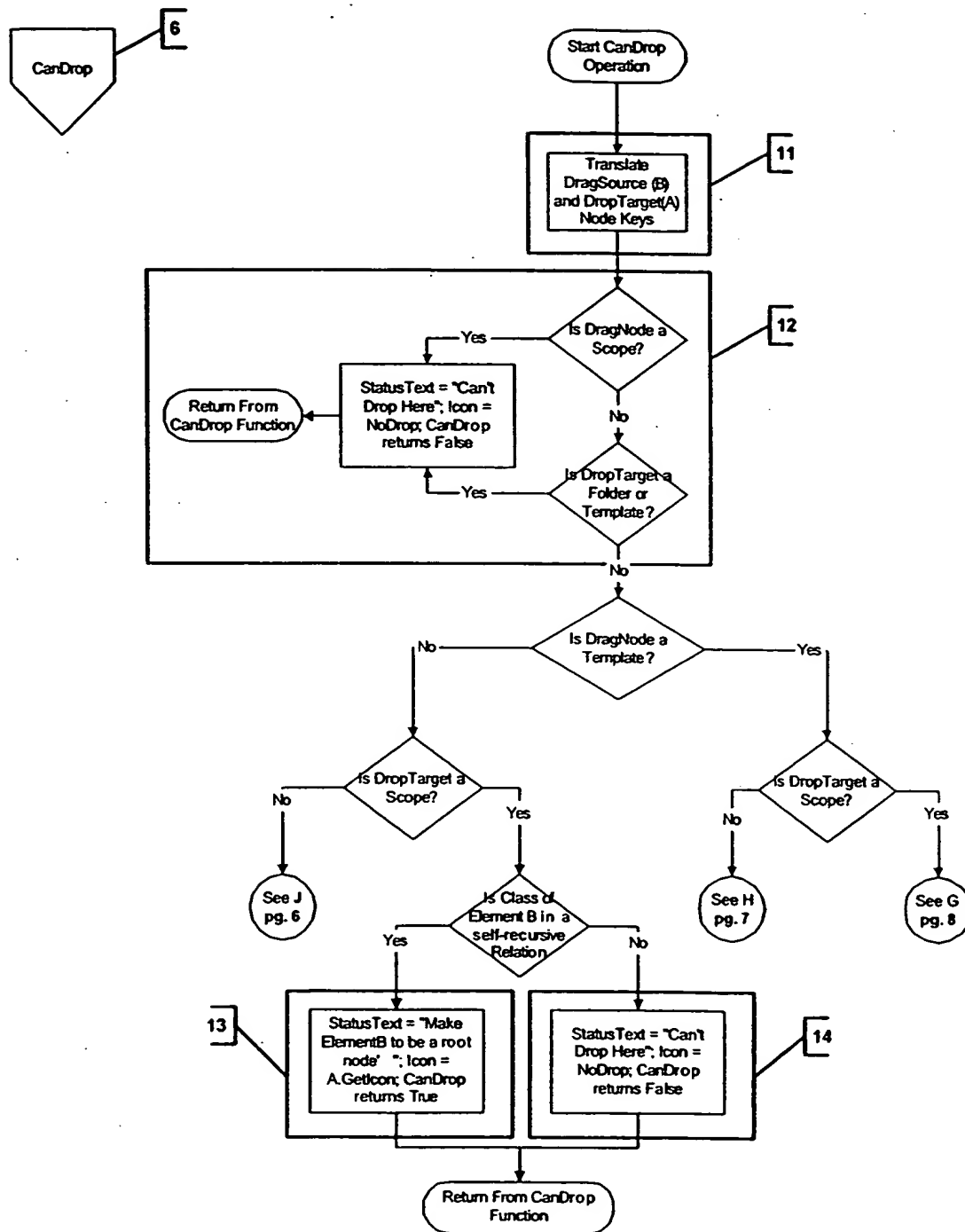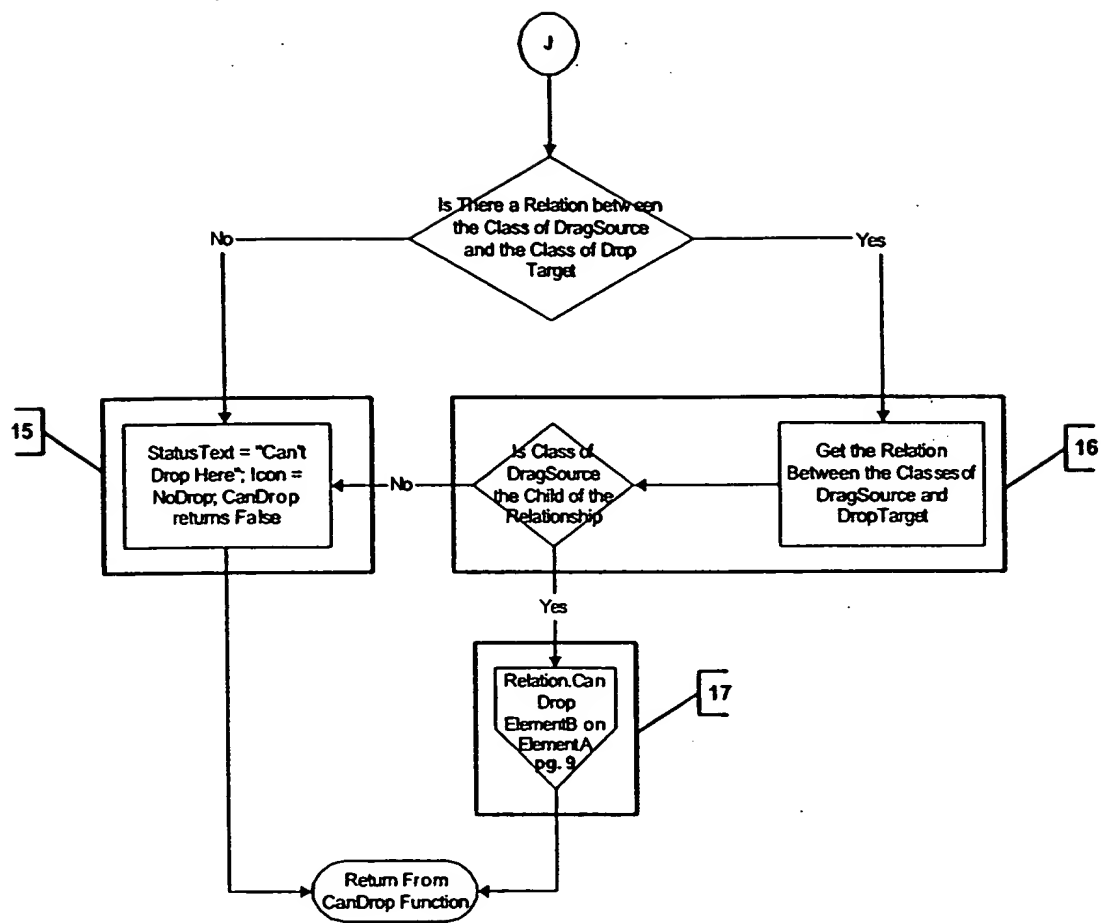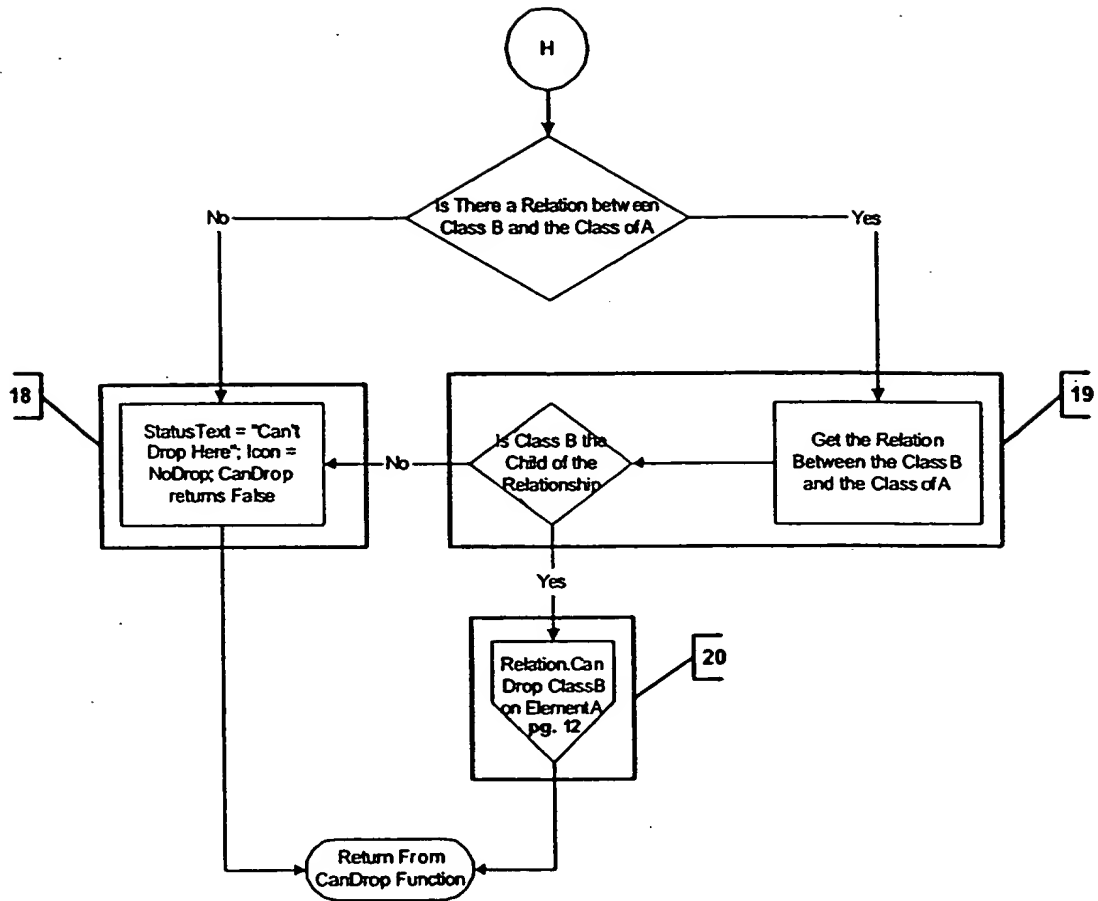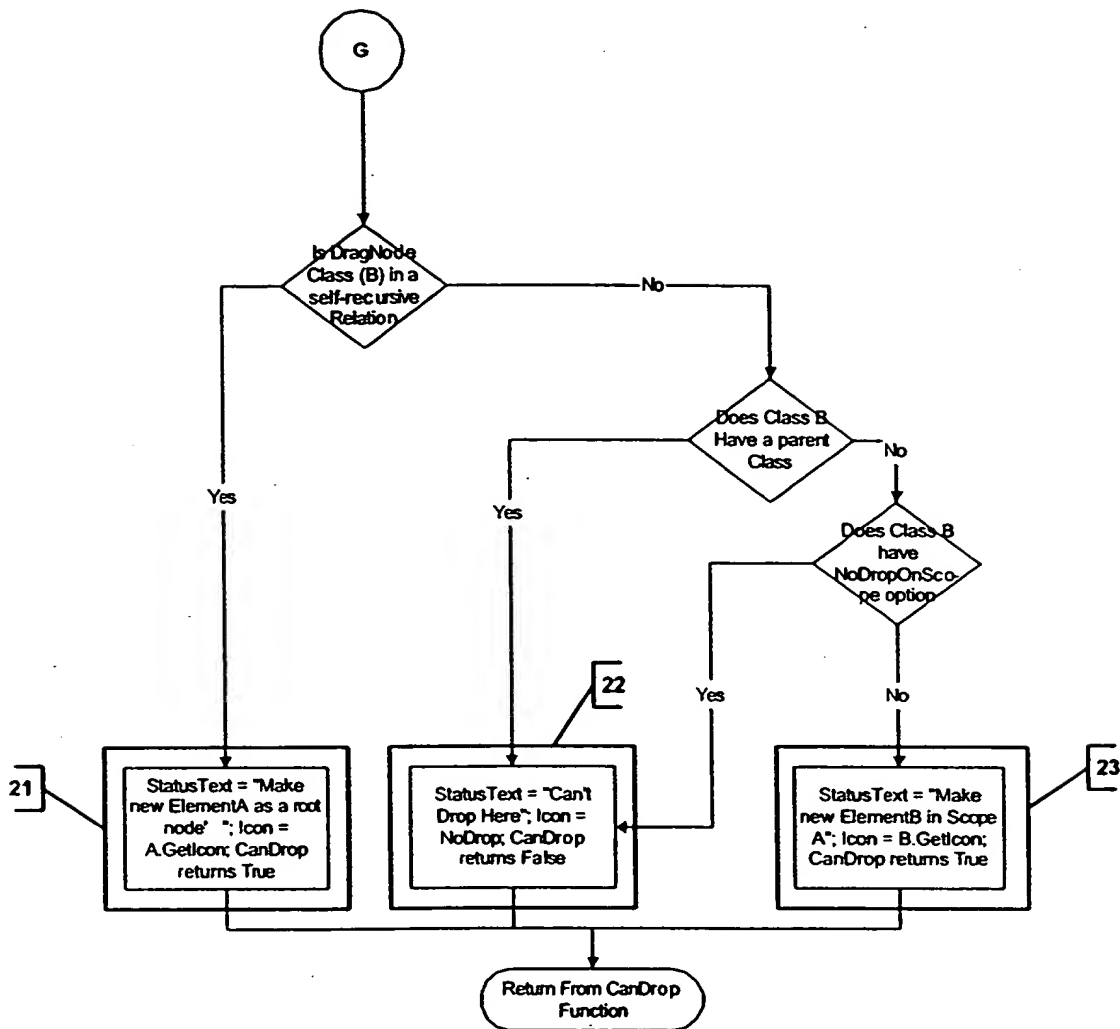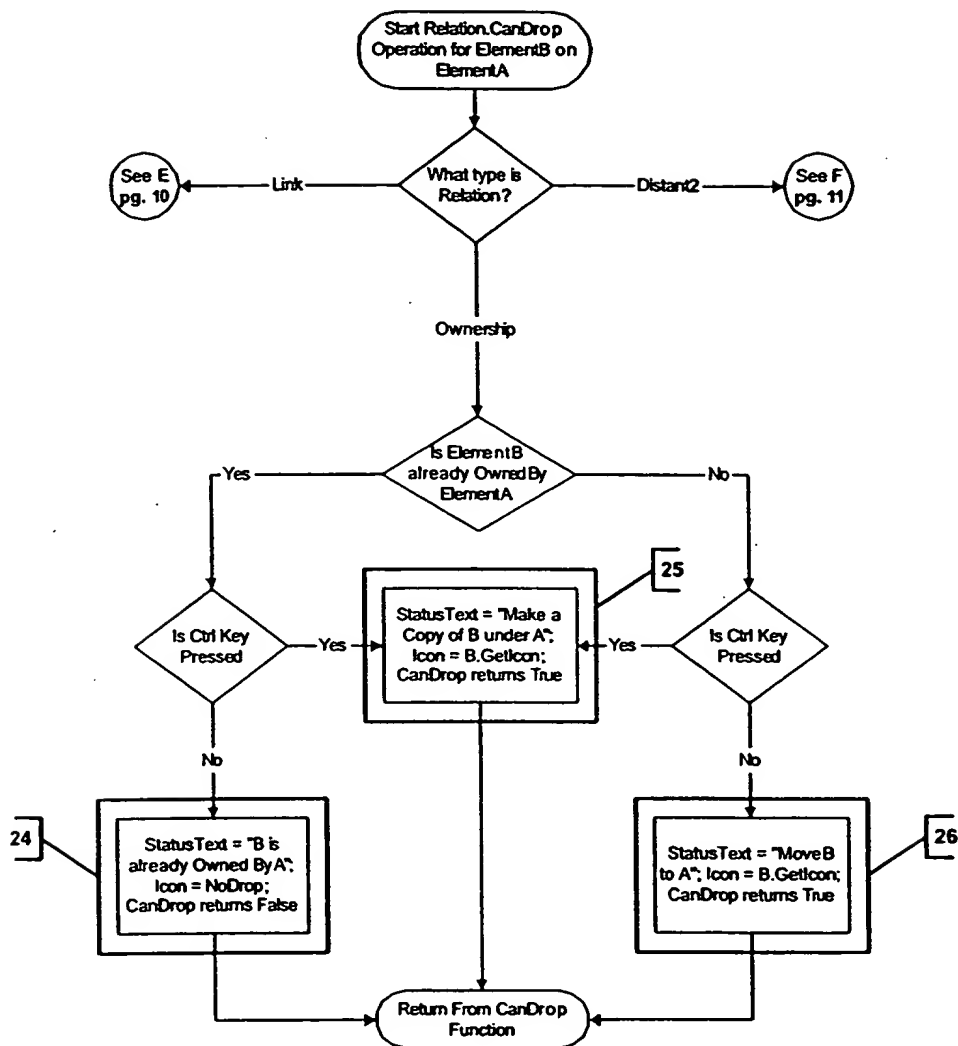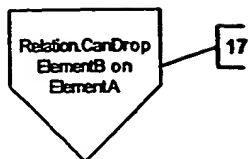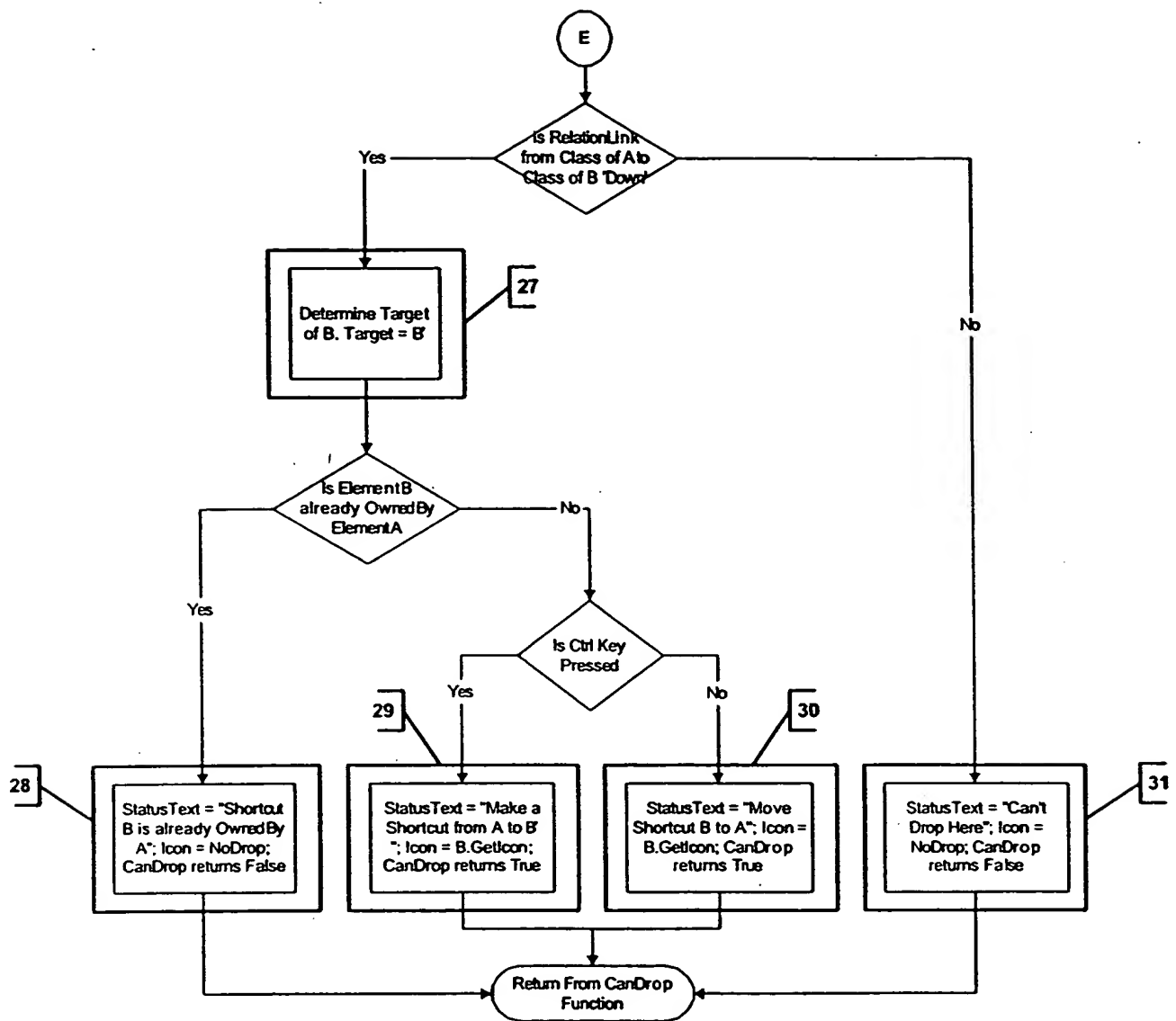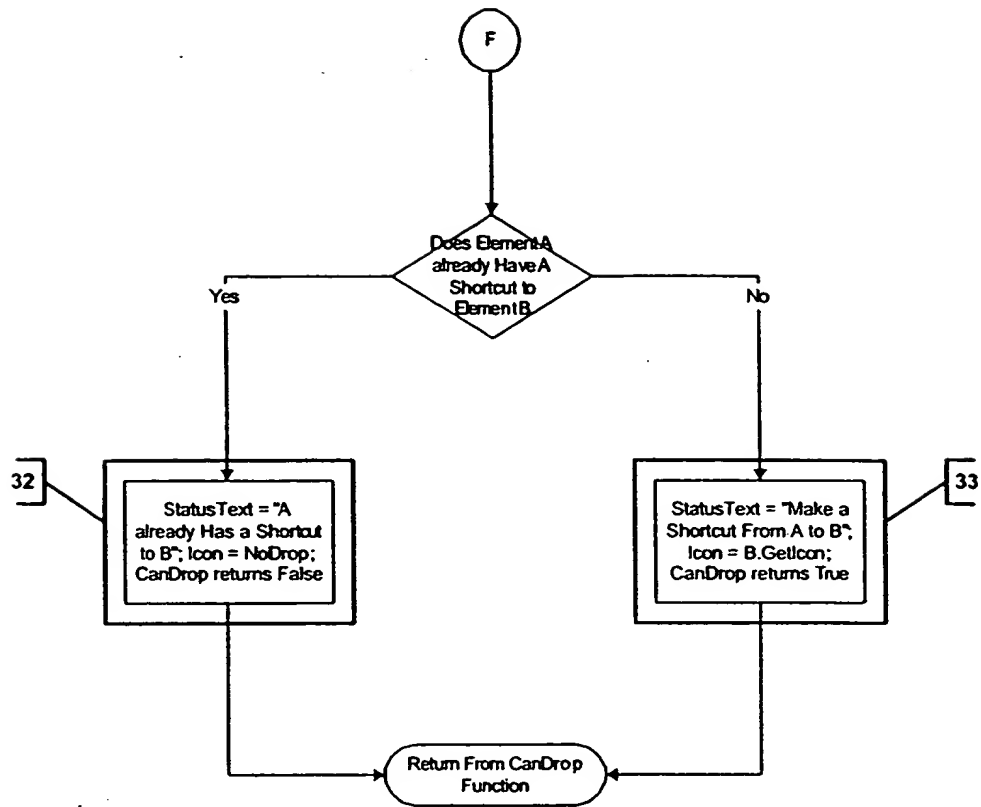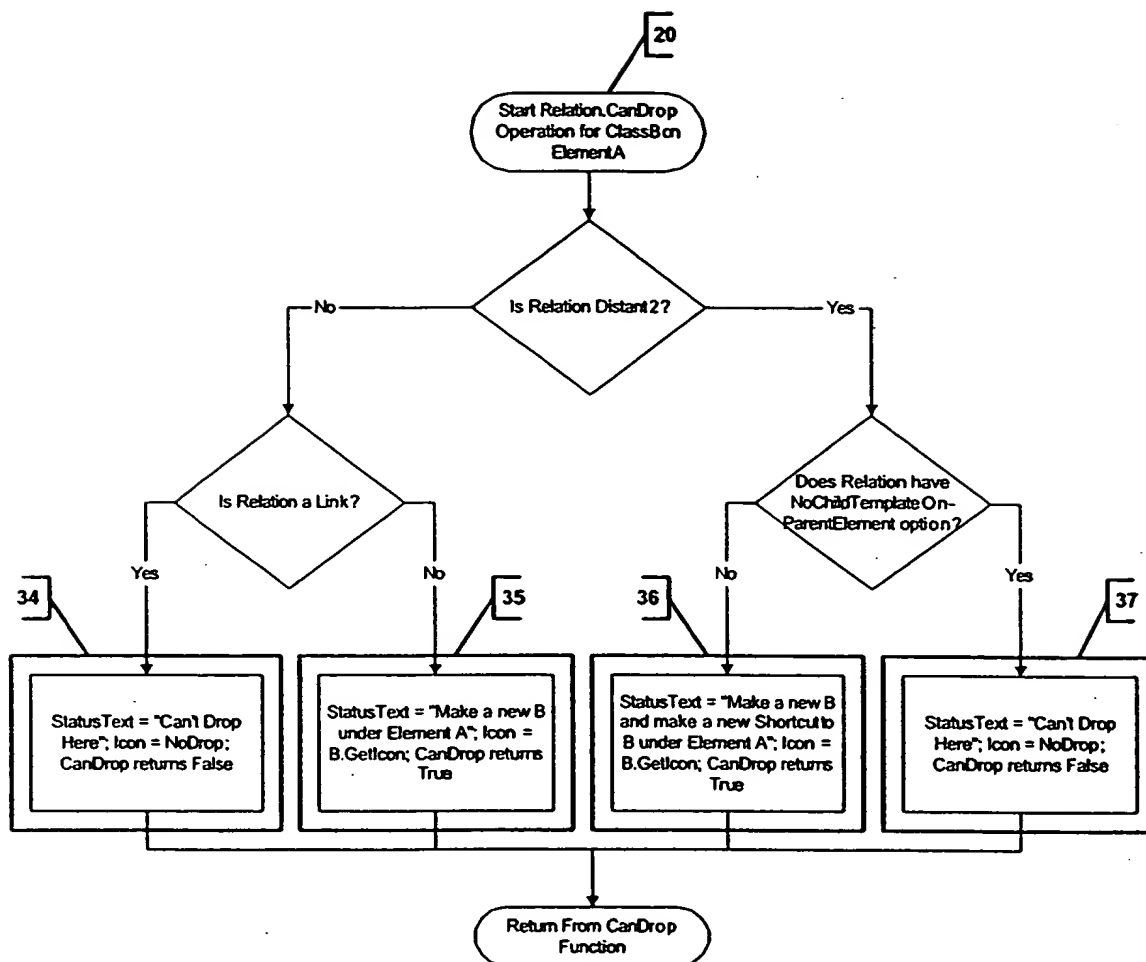Figure 8 Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

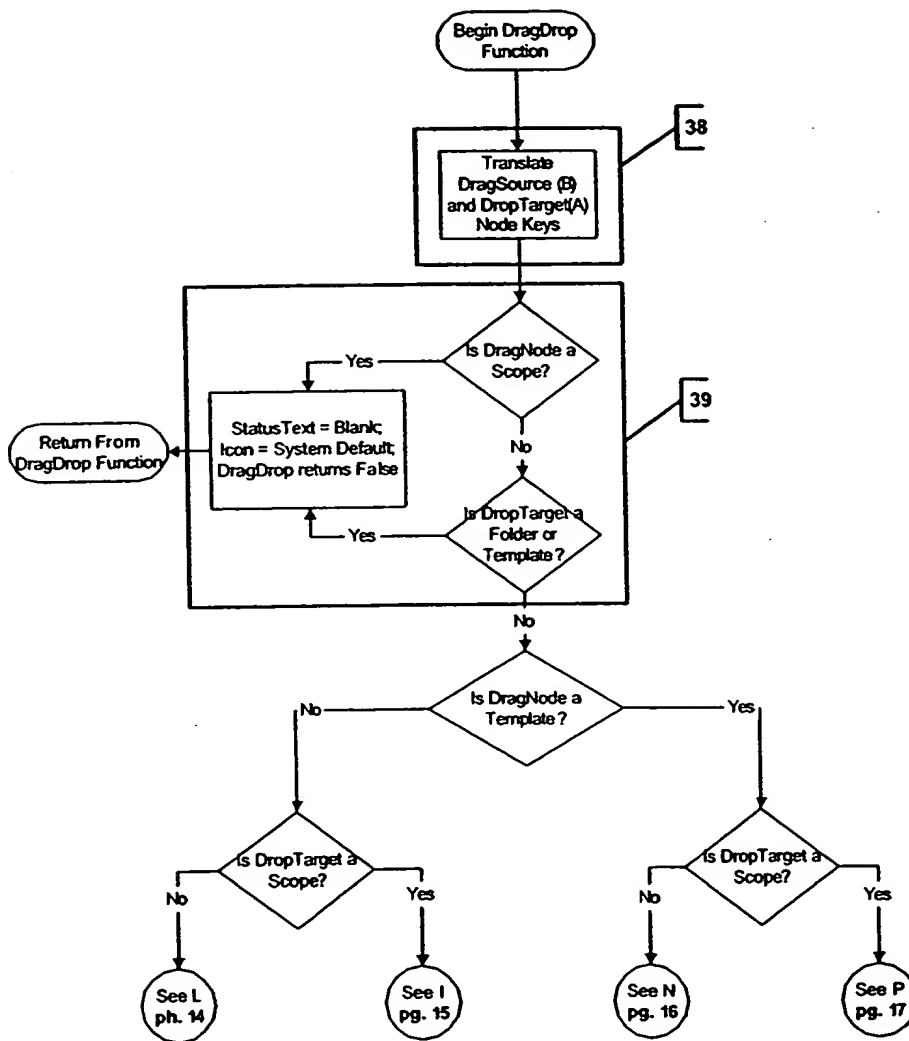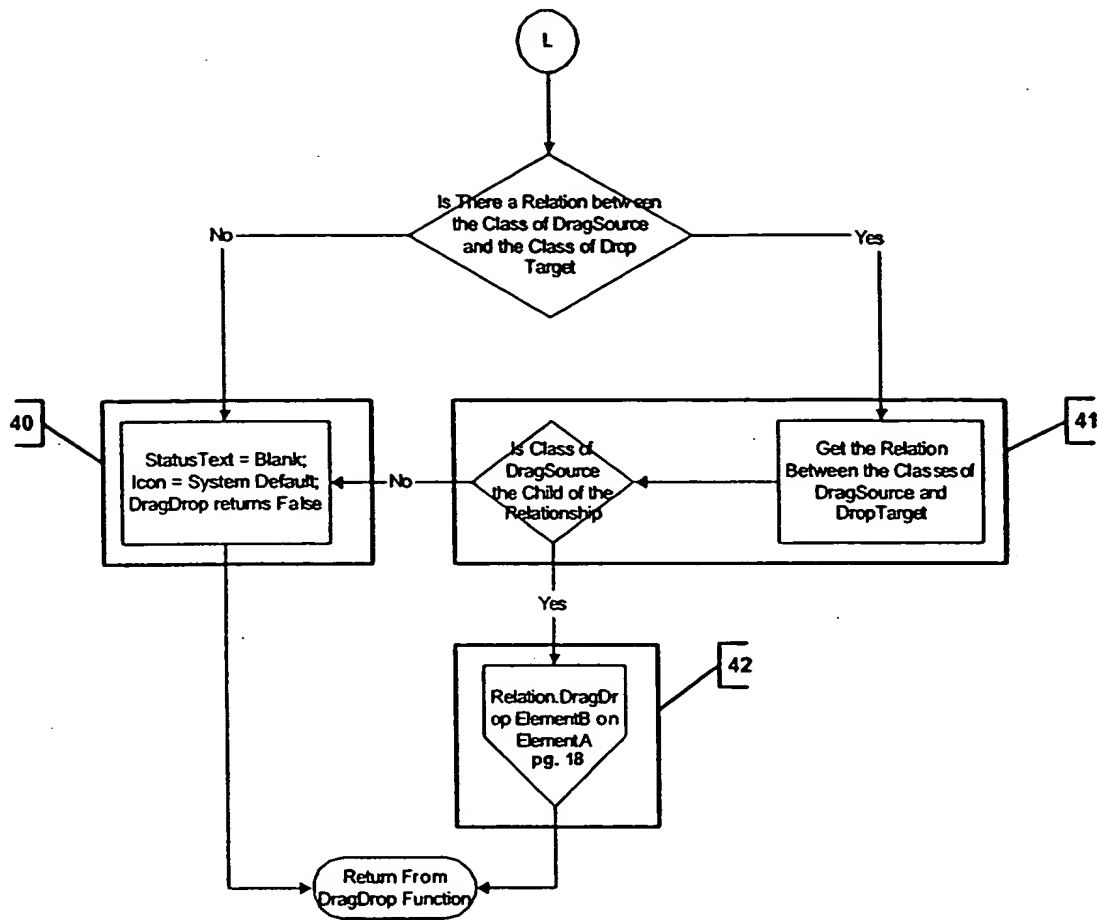Part 4 of 21

6

CanDrop

Start CanDrop
Operation

11

Translate
DragSource (B)
and DropTarget(A)
Node Keys

12

Is DragNode a
Scope?

Yes

StatusText = "Can't
Drop Here"; Icon =
NoDrop; CanDrop
returns False

Return From
CanDrop Function

No

Is DropTarget a
Folder or
Template?

Yes

No

Is DragNode a
Template?

No

Yes

Is DropTarget a
Scope?

No

Yes

Is DropTarget a
Scope?

No

Yes

See J
pg. 6

Is Class of
Element B in a
self-recursive
Relation

See H
pg. 7

See G
pg. 8

Yes

No

13

StatusText = "Make
ElementB to be a root
node" "; Icon =
A.GetIcon; CanDrop
returns True

StatusText = "Can't
Drop Here"; Icon =
NoDrop; CanDrop
returns False

14

Return From CanDrop
Function

Figure 8ᴁ Flow Chart depicting CanDrag, CanDrop,
and DragDrop edit operations

Part 5 of 21

J

Is There a Relation between
the Class of DragSource
and the Class of Drop
Target

No

Yes

15

StatusText = "Can't
Drop Here"; Icon =
NoDrop; CanDrop
returns False

No

Is Class of
DragSource
the Child of the
Relationship

Get the Relation
Between the Classes of
DragSource and
DropTarget

16

Yes

Relation.Can
Drop
ElementB on
ElementA
pg. 9

17

Return From
CanDrop Function

Figure 8 Flow Chart depicting CanDrag, CanDrop,
and DragDrop edit operations

Part 6 of 21

H

Is There a Relation between
Class B and the Class of A

No   Yes

18

StatusText = "Can't
Drop Here"; Icon =
NoDrop; CanDrop
returns False

Is Class B the
Child of the
Relationship

No

Get the Relation
Between the Class B
and the Class of A

19

Yes

Relation.Can
Drop ClassB
on Element A
pg. 12

20

Return From
CanDrop Function

Figure 8A Flow Chart depicting CanDrag, CanDrop,
and DragDrop edit operations
Part 7 of 21

G

IsDragNode Class (B) in a self-recursive Relation

No

Does Class B Have a parent Class

No

Yes

Yes

Does Class B have NoDropOnScope option

Yes

No

21

StatusText = "Make new ElementA as a root node' "; Icon = A.GetIcon; CanDrop returns True

22

StatusText = "Can't Drop Here"; Icon = NoDrop; CanDrop returns False

23

StatusText = "Make new ElementB in Scope A"; Icon = B.GetIcon; CanDrop returns True

Return From CanDrop Function

Figure 8.1 Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Part 8 of 21

Relation.CanDrop ElementB on ElementA

17

Start Relation.CanDrop Operation for ElementB on ElementA

What type is Relation?

Link

Distant2

Ownership

Is ElementB already Owned By ElementA

Yes

No

Is Ctrl Key Pressed

Yes

StatusText = "Make a Copy of B under A"; Icon = B.GetIcon; CanDrop returns True

25

Yes

Is Ctrl Key Pressed

No

No

StatusText = "B is already Owned By A"; Icon = NoDrop; CanDrop returns False

24

StatusText = "Move B to A"; Icon = B.GetIcon; CanDrop returns True

26

Return From CanDrop Function

Figure 8ᴀ Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Part 9 of 21

E

Is RelationLink from Class of A to Class of B Down?

Yes

No

Determine Target of B. Target = B'   27

Is Element B already Owned By Element A

Yes

No

Is Ctrl Key Pressed

Yes

No

28

StatusText = "Shortcut B is already Owned By A"; Icon = NoDrop; CanDrop returns False

29

StatusText = "Make a Shortcut from A to B'"; Icon = B.GetIcon; CanDrop returns True

30

StatusText = "Move Shortcut B to A"; Icon = B.GetIcon; CanDrop returns True

31

StatusText = "Can't Drop Here"; Icon = NoDrop; CanDrop returns False

Return From CanDrop Function

Figure 8 Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Part 10 of 21

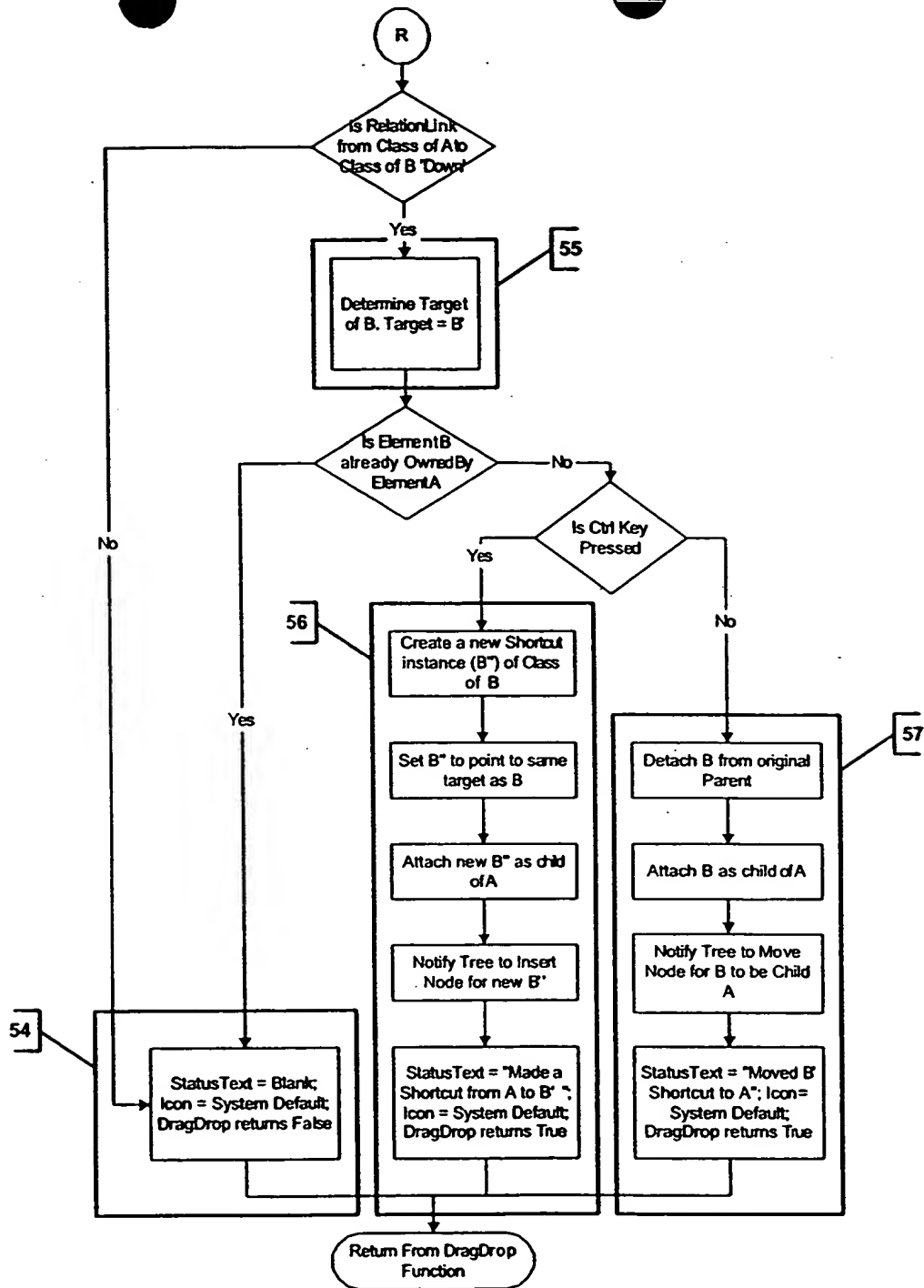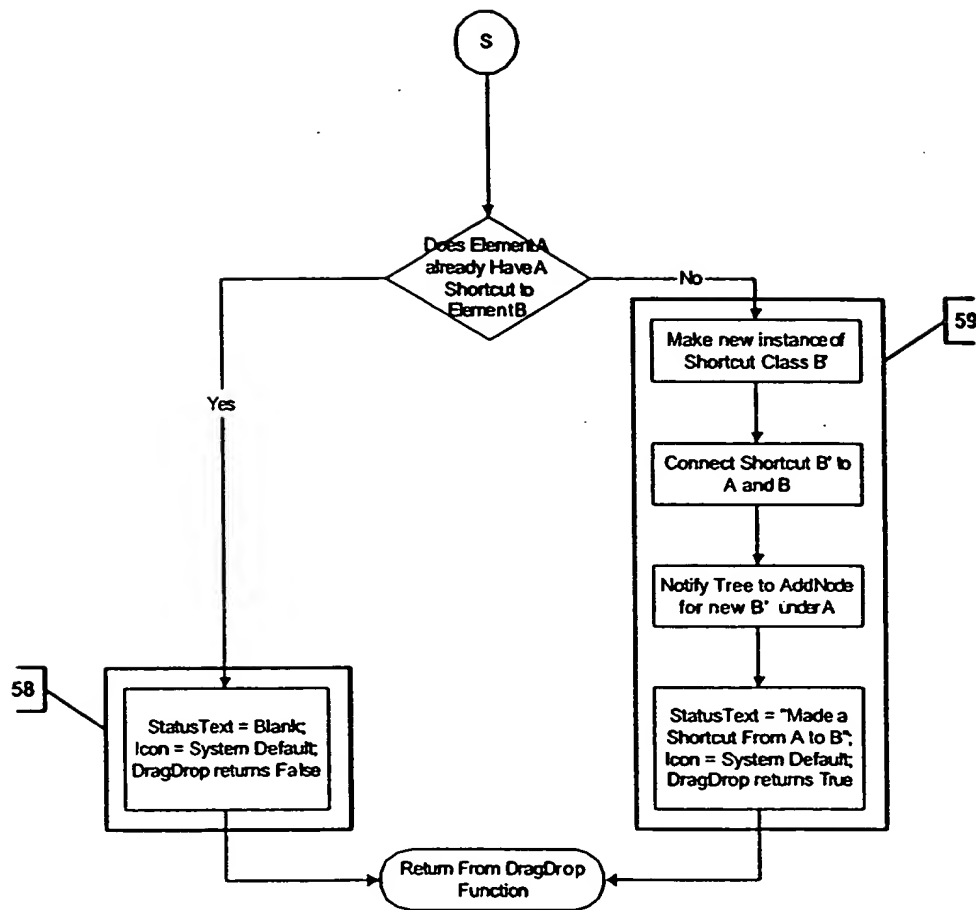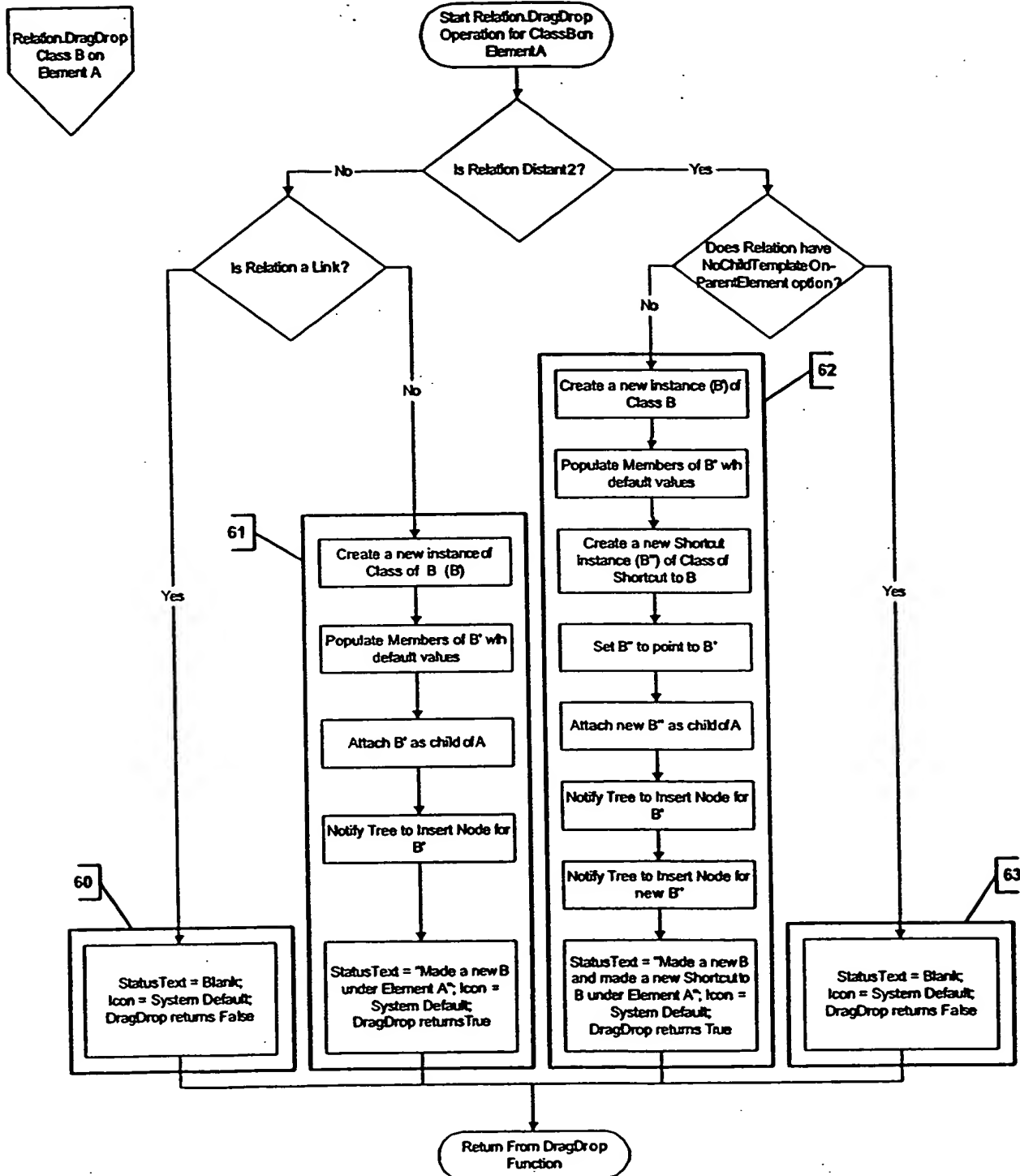Figure 8ₐ Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Part 11 of 21

Relation.Can Drop ClassB on ElementA | 20

20

Start Relation.CanDrop Operation for ClassB on ElementA

Is Relation Distant 2?

No — Yes

Is Relation a Link?

Does Relation have NoChildTemplateOn-ParentElement option?

Yes   No   No   Yes

34

StatusText = "Can't Drop Here"; Icon = NoDrop; CanDrop returns False

35

StatusText = "Make a new B under Element A"; Icon = B.GetIcon; CanDrop returns True

36

StatusText = "Make a new B and make a new Shortcut to B under Element A"; Icon = B.GetIcon; CanDrop returns True

37

StatusText = "Can't Drop Here"; Icon = NoDrop; CanDrop returns False

Return From CanDrop Function

Figure 8A Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations
Part 12 of 21

DragDrop ⌐9

Begin DragDrop
Function

⌐38
Translate
DragSource (B)
and DropTarget(A)
Node Keys

⌐39

Is DragNode a
Scope?

Yes

StatusText = Blank;
Icon = System Default;
DragDrop returns False

Return From
DragDrop Function

No

Is DropTarget a
Folder or
Template?

Yes

No

Is DragNode a
Template?

No — Yes

Is DropTarget a
Scope?

No   Yes

See L
ph. 14

See I
pg. 15

Is DropTarget a
Scope?

No   Yes

See N
pg. 16

See P
pg. 17

Figure 8A Flow Chart depicting CanDrag, CanDrop,
and DragDrop edit operations
Part 13 of 21

Figure 8 N Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Part 14 of 21

Figure 8ʌ Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Part 15 of 21

Figure 8A Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations
Part 16 of 21

P

Is DragNode Class (B) in a self-recursive Relation

No

Yes

48

Does Class B Have a parent Class

No

Make new instance of Class B with no parent

Yes

Does Class B have NoDropOnScope option

Notify Tree to AddNode for new B under Scope

No

50

Make new instance of Class B with no parent

Yes

49

Notify Tree to AddNode for new B under Scope

StatusText = "Made new ElementB at root"; Icon = System Default; DragDrop returns True

StatusText = Blank; Icon = System Default; DragDrop returns False

StatusText = "Made new ElementB"; Icon = System Default; DragDrop returns True

Return From DragDrop Function

Figure 8 Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Part 17 of 21

RelationDrag
Drop
ElementB on
ElementA

42

42

Start RelationDragDrop
Operation for ElementB on
ElementA

What type is
Relation?

See R
pg. 19

Link

Distant2

See S
pg. 20

Ownership

Is ElementB
already OwnedBy
ElementA

Yes

No

Is Ctrl Key
Pressed

Yes

52

Is Ctrl Key
Pressed

Yes

No

Create a new instance
of Class of B

No

53

Copy Members from
Dragged B to new B

Detach B from original
Parent

Attach new B as child
of A

Attach B as child of A

Notify Tree to Insert
Node for new B

Notify Tree to Move
Node for new B

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StatusText = Blank;
Icon = System Default;
DragDrop returns False

StatusText = "Made a
Copy of B under A";
Icon = System Default;
DragDrop returns True

StatusText = "Move B
to A"; Icon = B.GetIcon;
CanDrop returns True

Return From DragDrop
Function

Figure 8ᴀ Flow Chart depicting CanDrag, CanDrop,
and DragDrop edit operations

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Figure 8A Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Figure 8. Flow Chart depicting CanDrag, CanDrop, and DragDrop edit operations

Part 20 of 21

Figure 8 U Flow Chart depicting CanDrag, CanDrop,
and DragDrop edit operations

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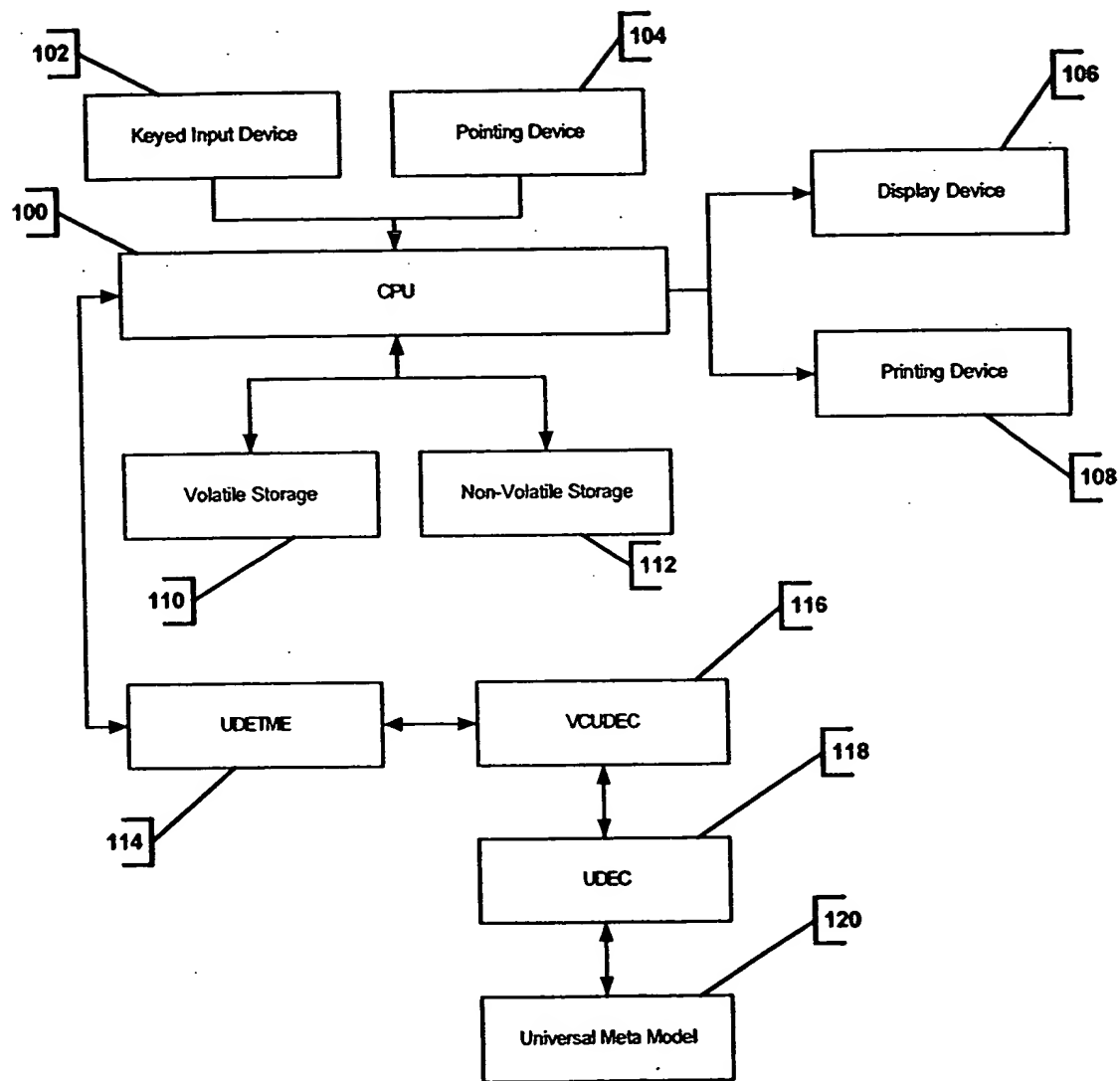
Figure 9: Computer System

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